

CLAIMS

1. An image processing apparatus comprising:
 - an edge width detection circuit which detects an edge portion of image data and outputs an edge width of the detected edge portion;
 - a ratio control amount generation circuit which generates a ratio control amount in accordance with the edge width;
 - a ratio generation circuit which generates a conversion ratio in accordance with the ratio control amount; and
 - a pixel number conversion circuit which performs a conversion of pixel number of the image data using the conversion ratio.
2. The image processing apparatus according to Claim 1, wherein the edge width detection circuit calculates a difference of the image data sampled in a predetermined sampling cycle and detects the edge portion in accordance with the difference of the image data.
3. The image processing apparatus according to Claim 1, wherein the ratio control amount generation circuit determines a generation period of the ratio control amount by multiplying the edge width by a constant value which is adjustable.
4. The image processing apparatus according to Claim 3, wherein a total sum of the ratio control amount is zero in each of the generation period of the ratio control amount.
5. The image processing apparatus according to Claim 1,

wherein

a constant reference conversion ratio is input to the ratio generation circuit; and

the conversion ratio generated by the ratio generation circuit is obtained by calculation using the reference conversion ratio and the ratio control amount.

6. The image processing apparatus according to Claim 1, wherein

the pixel number conversion circuit includes a first pixel number conversion block and a second pixel number conversion block;

the first pixel number conversion block receives a constant reference conversion ratio and the input image data, and performs a conversion of pixel number of the input image data using the reference conversion ratio, thereby outputting the image data to be input to the edge width detection circuit and the second pixel number conversion block; and

the second pixel number conversion block receives the conversion ratio and the image data, and performs a conversion of pixel number of the image data in a generation period of the ratio control amount using the conversion ratio.

7. The image processing apparatus according to Claim 1, further comprising:

an edge reference position detection circuit which receives the image data and the edge width and detects the edge reference position of the edge portion;

wherein the ratio control amount generation circuit receives the edge reference position in addition to the edge width and generates the ratio control amount in accordance with the edge width and the edge reference

position.

8. The image processing apparatus according to Claim 7, wherein the edge reference position detection circuit detects a position corresponding to a level dividing a difference of the edge portion into two equal parts, as the edge reference position.

9. The image processing apparatus according to Claim 7, wherein the edge reference position detection circuit detects a position where a sign of second derivative of the image data changes, as the edge reference position.

10. The image processing apparatus according to Claim 3, wherein the ratio control amount generation circuit can variably control the generation period of the ratio control amount.

11. The image processing apparatus according to Claim 1, wherein the ratio control amount generation circuit can variably control a maximum value and a minimum value of the ratio control amount.

12. The image processing apparatus according to Claim 3, wherein the ratio control amount generation circuit can variably control a maximum value, a minimum value, and the generation period of the ratio control amount.

13. The image processing apparatus according to Claim 3, wherein the ratio control amount generation circuit can arbitrarily set the generation period of the ratio control amount in accordance with the edge width.

14. The image processing apparatus according to Claim 1,

wherein the ratio control amount generation circuit can arbitrarily set a maximum value and a minimum value of the ratio control amount in accordance with the edge width.

15. The image processing apparatus according to Claim 1, wherein the ratio control amount generation circuit can arbitrarily set a maximum value, a minimum value, and a generation period of the ratio control amount in accordance with the edge width.

16. The image processing apparatus according to Claim 5, wherein the ratio control amount generation circuit can control number of ratio-control-amount data items in accordance with the reference conversion ratio.

17. An image display apparatus comprising:

- an edge width detection circuit which detects an edge portion of image data and outputs an edge width of the detected edge portion;

- a ratio control amount generation circuit which generates a ratio control amount in accordance with the edge width;

- a ratio generation circuit which generates a conversion ratio in accordance with the ratio control amount;

- a pixel number conversion circuit which performs a conversion of pixel number of the image data using the conversion ratio; and

- a display device which displays an image based on the image data obtained by the conversion of pixel number.

18. An image processing method comprising the steps of:
detecting an edge portion of image data and
outputting the edge width of the detected edge portion;

generating a ratio control amount in accordance with the edge width;

generating a conversion ratio in accordance with the ratio control amount; and

performing a conversion of pixel number of the image data using the conversion ratio.

19. An image display method comprising the steps of:

detecting an edge portion of image data and outputting the edge width of the detected edge portion;

generating a ratio control amount in accordance with the edge width;

generating a conversion ratio in accordance with the ratio control amount;

performing a conversion of pixel number of the image data using the conversion ratio; and

displaying an image based on the image data which was subjected to the conversion of pixel number.